



National Science Teachers Association Position Statement

Teaching Science and Technology in the Context of Societal and Personal Issues

Introduction

From health to climate change and from bioethics to energy, a myriad of personal and societal issues requires citizens to make informed decisions based on science and technology. These issues provide a rich and motivating context in which students can learn the principles and practices of science and technology. Science and technology influence every aspect of our lives, and in turn, we influence the direction and use of scientific and technological endeavors (Roberts 2007). In addition, science and technology are central to our well-being and success as individuals, as members of society, and as members of the global community. Therefore, NSTA advocates that K–16 science and technology instruction be provided within the context of personal and societal issues.

NSTA strongly promotes the education of a citizenry that is scientifically and technologically literate as defined in the National Science Education Standards (NRC 1996). This requires that we not only know, understand, and value scientific and technological concepts, processes, and outcomes, but that we are able to use and apply science and technology in our personal and social lives (Zeidler 2003). While both science and technology are human endeavors and involve similar basic procedures, science involves exploration of the *natural world* seeking explanations—based on evidence—for objects and events encountered, and technology focuses on the *human-made world*.

There is a national consensus about the central role that science and technology play in our society and its connection to our nation's competitiveness and future economic prosperity (Business Roundtable 2005). However, we have yet to ensure all students have the ability to use what they have learned when making decisions about what is appropriate in personal, societal, and global situations involving science and technology, and to value these endeavors (Abd-El-Khalick 2003).

The purpose of understanding science and technology is not solely for the sake of learning, but rather to enable and motivate citizens to contribute to and engage in society (DeBoer 2000). Therefore, NSTA sets forth the following declarations to promote the teaching of science and technology within the context of personal and societal issues.

Declarations

Regarding what students should be able to know and do in science within the context of societal and personal issues, NSTA recommends that students

- know the major concepts, hypotheses, and theories of science and be able to use them;
- include knowledge of science concepts and practices of science in making responsible everyday decisions;
- understand that the generation of scientific knowledge depends upon inquiry processes and upon conceptual theories;
- understand that the invention and improvement of technologies depends on the technological design process;
- understand that science and technology are products of human creativity and imagination, subject to verification and rigorous tests;
- recognize that scientific understanding is subject to change as evidence accumulates, or old evidence is re-evaluated;
- distinguish between scientific evidence and personal opinion;
- understand how society influences science and technology and how science and technology influence society;
- understand and weigh both the benefits and burdens of scientific and technological developments;
- be able to consider the trade-offs among alternative solutions when considering decisions that involve competing priorities;
- recognize that scientific and technologic advances may have unanticipated consequences, which only become apparent over time as the application or technology becomes more pervasive or more powerful;
- recognize that many decisions are global in nature and that people in other parts of the world are affected by our decisions and faced with similar decisions and issues themselves;
- understand how sustainable solutions to societal issues are those that meet the needs of the present without compromising the ability of future generations to meet their own needs;
- recognize how scientific and technologic advances may affect the environment positively or negatively;
- appreciate the value and role of research and processes of technological design; and
- know reliable sources of scientific and technological information, how to access them, and how to use these sources in the process of decision making.

Regarding how science instruction should occur within the context of societal and personal issues, NSTA recommends that science instruction

- incorporate scientific issues that are personally and socially relevant, and developmentally appropriate, as a way to generate interest in and motivation to engage in relating science to personal and societal issues;

- focus as much as possible on scientific and technological issues that are identified by students;
- incorporate the practices and understanding of scientific inquiry and technological design;
- provide multiple learning opportunities that encourage the study of science in personal and societal contexts;
- provide an authentic learning context by examining the societal dimensions of scientific issue, such as political, economic, and ethical considerations;
- approach decisions in an open unbiased way, respecting and acknowledging different perspectives, views, beliefs, and other ways of knowing;
- prepare students to become future citizens who are scientifically and technologically literate and willing to engage in making responsible and informed decisions.

*Adopted by the
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References

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